ECOLOGICAL REPORT : [Saratoga Creek]

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ENVIRONMENTAL IMPACT REPORT
SARATOGA CREEK
City of Santa Clara
FLOOD PROTECTION
AND ENVIRONMENTAL ENHANCEMENT

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APPENDIX F

ECOLOGICAL REPORT

By: Harvey, Hartesveldt, Heath & Stanley

GENERAL DESCRIPTION OF THE FLORA ALONGSIDE SARATOGA CREEK

The flora along Saratoga Creek is comprised of several different components: native riparian vegetation, other plant species native to this portion of California, non-native weeds, non-native ornamental plants which have escaped from the nearby backyards, and non-native trees which have been introduced for various purposes. Although the presence of non-native plant species outwiehgs the native plants along Saratoga Creek both is number (88 non-native to 31 native) and area covered the flora nevertheless still contains what is considered to be a significant contribution of native reparian and other Central California native plants.

The majority of riparian plants present are trees. These trees tend to be located either at the base of the banks next to the stream bottom or on the portion of the bank top nearest the stream. Most of the more important riparian tree species representative of this portion of California are present along the creek.(A list of representative riparian plant species for the San Francisco Bay Region is provided in Appendix I.) Of these, the willows, Blue elderberry, and California buckeye are found growing along many of the reaches whereas the Alder, Bigleaf maple, Box-elder, Fremont cottonwood, Western sycamore, and California laurel exhibit only a limited distribution at the present time.

The other native plants along the creek are primarily represented by shrubs (Poison oak, Coyote bush, Mule fat, Coffeeberry, etc.) and vines (Blackberry). Many of the plants in this grouping typically occur near creeks and streams but they are by no means restricted to the riparian community. Although these native plants are distributed throughout the length of the study area in many reaches they occur in lesser abundance than it is feasible for the area to support.

The top of the bank is heavily occupied by weedy non-native plants such as thistles, mustards, grasses, Cheeseweed, Dock, Filaree, etc. These weeds are all common to the Santa Clara Valley. The majority of these weedy species have come to us originally from the Mediterranean Region. They are well adapted to reestablishing their kind in these flat exposed areas and to withstanding the long dry period of late summer and fall. If left entirely alone these weedy patches would eventually yield to trees and shrubs which would be able to become established due to the more desirable conditions created by the presence of these plants.

Numerous non-native exotic plants have escaped from the domestic plantings in the nearby backyards. Not only are some of these plants able to spread into the right-of-way via seeds but others spread via means of underground and above ground runners. In addition, some of the residents have sought to beautify the portion of the right-of-way adjoining their property by planting and caring for non-native plants. The practice of disposing of trimmings by throwing them over the backyard fence continues to reintroduce some of these plants to the area. With the exception of Ivy and some of the trees, the majority of these non-native exotic backyard plants occupy an area of only a few feet from the fenceline. Typically these non-native plants are unable to compete with the better adapted natives unless man has altered the environment in their favor. However, the Lombardy poplar seems especially well suited to spreading along the presently exposed stream banks.

A number of fruit and nut trees have been introduced along the creek both recently by local residents and in the past by early farmers. The most prevalent are the Almond and the Black walnut which may in many cases represent the regrowth of previously felled grafted English walnut trees.

Of the introduced trees only the Eucalyptus, Monterey pine, Asiatic elm and Blackwood acacia occur other than at a few sites.

Differences in the distribution of both the native and non-native plants along the creek are difficult to relate to environmental factors owing to the great amount of man-induced disturbance. It is, however, possible to discern several real differences in the type and density of vegetation due to man's influence along the creek. Some of these are: the formation of trails and elimination of vegetation on some of the banks due to a high frequency of human foot trampling, the elimination of undergrowth in developed (park-like) areas, the continuance of weeds in mowed areas, the presence of ornamentals in landscaped areas, the lack of vegetation in sprayed areas, and the unnatural shape of natives in managed areas.

INVENTORY OF PLANT SPECIES FOUND ALONG SARATOGA CREEK

Notations:

1.) Plants were identified on both sides of the creek within right-of-way from its confluence with San Tomas Creek, near Monroe Street, to Lawrence Expressway.

2.) We did not identify plants growing (rooted) outside of the right-of-way (in backyards, etc.) even though they man have been hanging over the right-of-way.

3.) We did not make any attempt to identify all of the species of grasses present, since this was deemed irrelevant to the overall goals of the project.

4.) This inventory is not meant to be 100% complete, but we feel that we have identified all of the native plant species present.

5.) The word "native" is used herein to refer to vegetation that is common to this portion of California. Such vegetation may, or may not, be common to this portion of Santa Clara Valley.

6.) Records have been kept on the distribution of the plants inventoried along Saratoga Creek. Both the side of the creek and the reach number have been recorded for each species.

SARATOGA CREEK (MONROE STREET TO LAWRENCE EXPRESSWAY)

Native Riparian Vegetation

Cattail	*Typha* sp.
Arroyo willow	*Salix Lasiolepis*
Alder	*Alnus* sp.
Blue elderberry	*Sambucus glauca*
Horse-tail rush	*Equisetum* sp.
Wild cucumber	*Marah fabaceus (?)*
Bigleaf maple	*Acer macrophyllum*
California buckeye	*Aesculus californica*
Boxelder	*Acer negundo*
Fremont cottonwood	*Populus fremonti*
Western sycamore	*Platanus racemosa*
California laurel	*Umbellularia californica*
Willow (Red or Yellow)	*Salix* (*lasiandra* or *laevigata*)
Rush-nut sedge	

SARATOGA CREEK (MONROE STREET TO LAWRENCE EXPRESSWAY)

Other Native Plant Species

Wild blackberry	*Rubus* sp.
Coast live oak	*Quercus agrifolia*
Lupine	*Lupinua* sp.
California mugwort	*Artemisia vulgaris heterophylla*
Black walnut	*Juglans hindsi* (?)
Hedge nettle	*Stachys rigida*
Poison oak	*Rhus diversiloba*
Coyote bush	*Baccharis pilularis consanguinea*
Bee plant	*Scrophularia californica*
Mule fat	*Baccharis viminea*
Coast redwood	*Sequoia simpervirens*
California black oak	*Quercus kelloggi*
California poppy	*Eschscholzia californica*
Yerba santa	*Eriodictyon californicum*
Wild morning glory	*Convolvulus* sp.
California coffeeberry	*Rhamnus californica*
Honeysuckle	*Lonicera* sp.

Non-Native (Weedy) Plant Species

Crab grass	*Digitaria* sp.
Common foxtail	*Hordeum murinum*
Sow thistle	*Sonchus* sp.
Cheeseweed	*Malva Parviflora*
Curly dock	*Rumex crispus*
Mild thistle	*Silybum marianum*
Italian ryegrass	*Lolium multiflorum*
Vetch	*Vicia sativa* (?)
Bristly oxtongue	*Picris echioides*
Wild radish	*Raphamus sativus*
French broom	*Cytisus monspessulanus*
Reed grass	*Arundo donax*
Red-stem filaree	*Erodium cicutarium*
Dandelion	*Hypochoeris* sp.
Common yellow mustard	*Brassica campestris* (?)
Cockle-burr	*Xanthium strumarium*
Italian thistle	*Carduus* sp.
Horehound	*Marrubium vulgare*
Buckhorn plantain	*Plantago lanceolata*
Wild oats	*Avena fatua*
Wild barley	*Hordeum* sp.
Prickly lettuce	*Lactuca scariola*
Pineapple weed	*Matricaria suaveolens*
Milkweed	*Asclepias* sp.
Pigweed	*Amaranthus* sp.

Non-native weedy plants coninued

Tree tobacco	*Nicotiana glauca*
Clover	*Medicago* sp.
Spurge	*Euphorbia* sp.
Scarlet pimpernel	*Anagallis arvensis*
Short-podded mustard	*Brassica incana*
Canary grass	*Phalaris canariensis*
Watercress	*Nasturtium officinale*

SARATOGA CREEK

Non-Native Backyard Garden Escapees

Pyracantha
Ivy
Rose
Willow, curled leaf(?)
Garden mint
Pepper tree
Lombardy poplar
Geranium
Ice plant
Asparagus "fern"
Rose(yellow)
Sweet pea
Bottlebrush
Oleander
Bear's breech
Periwinkle
Sedum
Century plant
Juniper
Bamboo
Pampas grass
Calla lily
Castor bean
Virginia creeper
Honeysuckle
Weeping willow
Fern
Papyrus(?)
Swiss chard
Nasturtium
Prickly-pear cactus
Strawberry tree
Red valerian
Poppy

Introduced Fruit and Nut Trees

Black walnut	*Juglans nigra*
Olive	*Olea europaea*
Almond	*Prunus*
Quince	*Cydonia oblonga*
English walnut	*Juglans regia*
Nectarine	*Prunus* sp.
Fig	*Ficus carica*
Prune	*Prunus*

Other Introduced Tree Species

Blue gum Eucalyptus	*Eucalyptus globulus*
Cypress	*Cupressus* sp.
Incense cedar	*Libocedrus decurrens*
Monterey pine	*Pinus radiata*
Asiatic elm	*Ulmus parvifolia*
Blackwood acacia	*Acacia melanoxylon*
South American cedar	*Libocedrus chilensis*
Aleppo pine	*Pinus halepensis*
Cryptomeria	*Cryptomeria japonica*
Douglas fir	*Pseudotsuga douglasi*
Beach pine	*Pinus contorta*
Catalina ironwood	*Lyonothamnus floribundus asplenifolius*
Hawthorne	*Crataegus* sp.

SUGGESTIONS FOR THE VEGETATIVE REHABILITATION OF SARATOGA CREEK, SANTA CLARA, CALIFORNIA.

Descriptions and illustrations of the original nature of Saratoga Creek have not been located so that no accurate picture of its vegetation exists. However, the kinds of vegetation found in such riparian situations in the Valley are recorded by botanists so that a presumption of the species of trees, shrubs, vines nad herbs that were native there may be made with some degree of assurance. Their abundance and frequency of occurance, of course, remains unknown, but is of minor importance to the goals of this project.

Because of the realignment of segments of the Creek by man, because of the increased irregularity of yearly waterflow through the creek channel (owing in large measure to man's cultural activities within the creek's drainage basin), and because of the lowering of the water table beneath the Valley floor, it must be further presumed that there is little hope of restoration of the creek and its banks to its original conditions even if these conditions were accurately known. Yet, its present condition can be substantially altered to something closer to the original condition and to conform more to the expressed desires of the adjacent land owners and other users of the creek.

The continued existance of a significant number of native riparian tree species indicates the continuance of conditions suitable for their growth. The possibility of promoting the expansion of native riparian vegetation along the creek seems even more probable in light of the fact that several of these tree species (ex. Blue elderberry) are currently in the process of extending their range along the creek by natural propagative means.

It is not realistic to expect to recreate a riparian plant community composed entirely of native species. To attempt this would be an undesirable approach to the restoration of Saratoga Creek since it would necessitate the removal of the greater portion of the existing vegetation which provides both forage and cover for the wildlife species along the creek. Expressed differently, although native species are generally preferable over non-natives, the removal of the majority of the existing non-natives is not recommended except where they have died or otherwise present a hazard or other kind of problem.

It should be possible to promote the revegetation of the banks along Saratoga Creek towards a more natural community of organisms by initiating a combination of the following programs; 1.) reintroducing certain riparian plant species which are presently absent from the area, 2.) reintroducing many of the existing native riparian plants at other localities along the creek, 3.) allowing plant succession to proceed towards the riparian condition, 4.) selection favoring the existing native plant species, 5.) selecting against certain of the non-native plant species along the creek, 6.) attempting to eliminate certain of the non-native platns from along Saratoga Creek.

Difficulties in reestablishing woody vegetation.

There are certain difficulties that are anticipated in the establishment of woody vegetation within the confines of the creek right-of-way. These do not appear at this time to be insurmountable, although the cooperation of residents, other users of the creek, city and county agencies, possibly the local school districts and others will be required to better assure establishment of trees and other vegetation.

Anticipated difficulties are:

1.) The reduced water availability for plant growth during the hot, dry summer growing season.

2.) The existing, accentuated, periodicity of runoff of surface waters.

3.) The establishment of plants in the seemingly hard, hostile soils of the creek bank.

4.) The erosive losses of plants by high water flow prior to root establishment in the hard soils of the creek bank.

5.) In several reaches of the creek, the banks have been eroded perpendicularly, posing problems for planting unless those protions of the banks are sloped first.

6.) In some places, cement debris may restrict planting unless physically removed.

7.) vandalism

Native trees, shrubs and vines are generally calculated to have the highest chance of success of establishment in their own native soils and climatic regime, and they certainly will recreate more of a natural scene typical of what the original was like than with the use of non-native species. For these and other reasons, native species will be recommended most strongly for plantings along the creek, but with some reservations for the possible use of some non-native species that may conceivably be better adapted to the drier summer conditions, or that would possibly be more effective as a soil-binder to reduce erosive losses of soil.

Although streambank stabilization by means of planting has been practiced in the more humid Midwest and East, it appears that it has not been tried much in the subhumid West. Literature on the subject has not been found for California which suggests that neither research nor experimentation may have been conducted here. Even for the Midwest where willows and alders have been used for this purpose for several decades, the literature is not abundant. White and Brynildson, 1967, list but one other refernce in their "Guidelines for Management of Trout Stream Habitat in Wisconsin"(64) Certainly, other references exist for the Midwest, but have not been located.

It must be appreciated that stream flow patterns in the Midwest and East are much less fluctuating through the course of the year than here in our Mediterranean California climate. They are seldom dry or even nearly so in summer months. This could be a major deterrent toward either replanting or research in this field, although it should not negate the possibility that such plantings, if carried out with reasonable care, would be successful.

Because projects of this nature are not common in California, the literature is scanty on the subject so that this undertaking should be made in an aura of experimentation. Considerable thought must be given to the goals sought for the plantings, and great care must be exercised in the plantings and for the care of the plants until such time that they become established. The latter may be in terms of summer irrigation of the young plants and of fertilization to insure optimum root development. Following establishment, individual care can be slackened and eventually abandoned. Records of plantings, their success or failure, and of growth rates of surviving plants, etc., would certainly be useful in terms of future rehabilitation of creek beds in the Santa Clara Valley, and would prove useful to others engaged in similar work. It is therefore recommended that any attempt to revegetate portions of Saratoga Creek should be undertaken as a research project allowing for experimentation in planting (plant species utilized, location of plantings, planting proceedure, follow-up care, etc.) and the accurate recording of all pertinent data.

Considerations for planting.

The trees, shrubs and vines selected for planting will have varying characteristics with respect to soil, drainage, soil moisture and light requirements, and should be chosen carefully for specific locations in the various portions of the creek. Such selection will insure a higher measure of successful plantings.

There are three physical situations of the creek bank (Fig. I) which should be considered in the plantings: the bank top, the upper bank, and the lower bank.

Fig. I Cross section of the creek

The other major criterion of selection is the species' degree of shade tolerance.

Inasmuch as the soils are largely hard and stony and present a poor soil moisture regime in the drier summer and autumn months, preparation for planting should include the digging of holes and a loosening of the soil, possibly with the addition of sand, gypsum, or leaf mold to insure optimal seedling growth and success.

Plant species recommended for use in the revegetation of Saratoga Creek.

The following are the species which are most highly recommended for planting with a description of their characteristics and/or requirements for optimal growth. They are presented by area of planting.

The Bank Top

1.) Fremont cottonwood (*Populus fremontii*). Deciduous. This is the cottonwood of the semi-arid West, and is found widely in the lower elevations of California, but almost exclusively in riparian situations because of its dependence upon abundant soil moisture (Sudworth, 1908). Although it reportedly does best in sandy or gravelly soils (Sudworth, 1908, van Dersal, 1939), specimens are growing successfully now along Saratoga Creek in soils with high clay content and seemingly poor soil moisture availability.

Growth Form. The tree at maturity usually takes on a spreading or vase-shaped habit, and attains a height of from 40 to 100 feet (McMinn and Maino, 1973). In optimum conditions, it grows rapidly (van Dersal, 1938).

Tolerance. Sudworth (1908) states that this species is extremely intolerant of shade, while van Dersal (1939) claims a fair degree of tolerance for soils of a saline nature.

Longevity. Not well known, but possibly 50 to 75 years. Sudworth (1908) comments that "Fremont cottonwood is of great service for protecting and holding the shifting banks of bottomland on western streams......." Peattie (1953) and van Dersal (1939) identify its susceptibility to attack by mistletoe, but there is little to suggest any problems that would result from its presence.

2.) California or coast live oak (*Quercus agrifolia*).Evergreen. This is one of the best known of the California oaks and is prevalent in this part of Santa Clara Valley.

Growth Form. Although the California live oak is more common in open fields or savannas, it is also found in riparian situations. The typical form of the tree in open fields is that of a broad and spreading crown. In riparian communities where competition for light is greater, the crowns conform more to light availability and are narrower and taller. Although it fares best in dry sandy and loamy soils, its presence along Saratoga Creek where clay contents are high suggests its capability of existence there.

Tolerance. Sudworth (1908) states that it is very tolerant of shade throughout its life.

Longevity. 100 to 300 years, and possibly more. The acorns are used by many species of birds and mammals as food. The foliage is sometimes attacked by tent caterpillars (van Dersal, 1939).

3.) Interior live oak (Quercus wislizenii). Evergreen.

Growth form. This species is not as spreading as for the California live oak, and not as large at maturity. In poor soils, it persists and grows slowly, even "where stormbeaten or pounded in the sandy and gravelly washes of streams (Sudworth, 1908).

Tolerance. Sudworth (1908) lists this species as being very tolerant of shade, while van Dersal (1939) feels that it is less tolerant that once believed.

Longevity. Possibly 100 to 200 years. The interior live oak coppice-sprouts quickly following fires (van Dersal, 1939) and possibly following other forms of disturbance. Sprout-growth, however, is slow. This species is also subject to attack by mistletoe.

4.) California buckeye (Aesculus californica). Deciduous. This species is more common in open, dry areas, but also frequents stream borders too, and is often found in situations that appear difficult for the establishment of other species.

Growth form. This species has many forms, but is commonly a short (10 to 20 feet) tree with a broadly spreading crown in the more open areas (Sudworth, 1908). Along streams, the crown is irregular because of the competition for light.

Tolerance. Tolerates dry soil, but only light shade (Sudworth, 1908).

Longevity. 100 years or more.

The buckeye is a beautiful tree in the spring because of its spikes of white flowers. The abundant fruit serves as food for some kinds of wildlife. When broken off or cut, this species coppice-sprouts freely (van Dersal, 1939).

5.) Bigleaf maple (Acer macrophyllum). Deciduous. This species is a potentially large tree when full grown in the better moist soils. It has a definite affinity for soil moisture, and only a few are to be found in this stretch of Saratoga Creek. Its use may be limited.

Growth form. In the open, this species produces a moderately broad crown; in the competition of shade, the tree grows taller and produces a narrower crown.

Tolerance. Tolerates shade, especially in its early life.

Longevity. 150 to 200 years.

6.) Box elder (*Acer negundo*) Deciduous. This species of maple is quite versatile in that it may be found in a variety of sites ranging from dry to moist. It is a rather common stream-border tree where soils are sandy or gravelly, although it grows optimally in soils high in their humus content (Sudworth, 1908).

Growth form. Depending upon site, the box elder may take on the form of a large shrub to a small tree, and on the better sites, it sometimes becomes a large tree with a spreading crown. Rapid-growing in the better sites.

Tolerance. It is moderately tolerant of shade, especially in its early life (Sudworth, 1908).

Longevity. Probably to about 75 years.

The wood of the box elder is soft and brittle and easily damaged by storms. It is also susceptible to disease and insects (van Dersal, 1939).

This species is a prolific bearer of seed, although its scanty reproduction suggests that it is a poor competitor for light and soil nutrients. The seeds are fed upon by a variety of birds and small mammals.

7.) Blue-berry elder (*Sambucus caerulea*). Deciduous. A large shrub to small tree 15 to 30 feet tall, and occasionally larger, with trunks up to 2 feet in diameter. Found in moist to dry situations (Sudworth, 1908).

Growth form. Spreading shrub with greenish stems. Stems numerous. Coppice-sprouts freely, the sprouts growing to 15 feet per year. An abundant producer of berries. Reproduction is frequent.

Tolerance. Endures very little shade at any period of its life (Sudworth, 1908).

Longevity. Not well known, but probably 75 years. The roots of Blueberry elder are spreading and provide good soil binding and protection against erosion.

The abundant berries produced serve as a food source for many kinds of wildlife.

8.) California coffeeberry (*Rhamnus californica*) Evergreen.

Growth Form -A rather large, open-branched shrub with dull green leaves.

Tolerance - Capable of withstanding fairly dry conditions. Produces an abundance of large, black edible berries.

The Upper Bank

The trees suitable for this site are those suitable for the bank top. However, because of the sloping nature of the bank, additional precautions must be taken in the planting to minimize erosive soil loss, and loss of the seedlings themselves.

Shrubs and vines would serve a better purpose on the sloping banks to stabilize the soil in times of high water. The native shrubs to this area are Coyote bush (_Baccharis pilularis_), Mule fat(_Baccharis viminea_) and Poison oak (_Rhus diversiloba_). Coyote bush and Mule fat could be planted on the upper to middle banks in selected places. Although Poison oak is not recommended for planting, it serves as a soil binder and probably should not be sprayed where it is well established and is providing good soil protection. Its agressiveness in poor soils is well known and is ....a free service. Large clumps, rather than being eradicated, could be labeled to warn persons who may not recognize it.

Blackberry (Rubus) is abundant in some places along Saratoga Creek, indicating its potential for additional establishment of the species there. Van Dersal (1939) makes the following observation regarding this entire genus: "The erosion-control value of the blackberries ... lies in the fact that many species form dense thickets comparatively rapidly, and that many form dense mats on the ground. The branches of most species are either prostrate or with tips bent down, and wherever they touch the ground, they take root. Most species will grow satisfactorily in very barren and infertile soils and most of them require sunlight for their best growth...."

The fruits are favored as food for a large number of small birds and mammals, and are also sought after by man.

If they could be encouraged to cover the slopes, rooting at points along the stems, it appears that this vine would replace (or possibly cover) the more unsightly broken cement blocks.

The Lower Bank

The species adapted to this situation are limited to those forms which can grow well with their roots in very wet soil much of the year. The native species are willows, white alder, and sycamore.

1.) Arroyo willow (_Salix lasiolepis_). Deciduous. This is the more abundant of the two native willows along Saratoga Creek, and the one most likely to succeed.

Growth Form. This species varies from a cluster of shoots to a tree from 15 to 30 feet in height, and with a trunk diameter of from 6 to 10 inches, occasionally larger (Sudworth, 1908). They are rapid-growing in wet situations (van Dersal, 1939).

Tolerance. Not specifically known, but willows are generally regarded as intolerant of shade.

Longevity. Not known, but in excess of 25 years.

The seeds of willows are valued as food by many species of wildlife (van Dersal, 1939).

A great value of willows is that they can be propagated from cuttings placed in slits in moist soil.

2.) Black willow (Salix lasiandra). Deciduous. This species in not vastly different in its characteristics than arroyo willow, but it matures in a much larger size, attaining heights of from 30 to 50 feet, and trunk diameters up to 30 inches. It often forms a bushy tree under 10 feet in height.

3.) White alder (Alnus rhombifolia). Deciduous. This species is another riparian form that does not grow well except where its roots are in moist soil. Although this species is more commonly found in mountain habitats, it is not uncommon along stream banks in these lowland areas.

Growth form. A tall, usually slender tree to 50 and 75 feet, occasionally taller, and with straight trunks clear of branches to one-half of its height (Sudworth, 1908). Crowns are broad, open and dome-like.

Tolerance. Highly tolerant of shade throughout its life; best growth with moderate overhead light.

Longevity. Not well known, but in excess of 50 years.

4.) Western sycamore (Platanus racemosa). Deciduous. A strictly riparian species that must have constant moisture in its rooting zone (van Dersal, 1939).

Growth habit. A large tree at maturity that may be from 40 to 90 feet in height. The trunk is often leaning and much branched to form a picturesque riparian tree with a large and spreading crown.

Tolerance. It endures little shade at any time in its life span (Sudworth, 1908).

Longevity. Believed to live to 100 years and more.

This species is "exceedingly tenacious of life, repairing damage to its crown and trunk by vigorous sprouts and growth of wood." (Sudworth, 1908).

Discussion

The establishment of trees, shrubs and vines in the Saratoga Creek right-of-way will require the understanding and cooperation of the adjacent land owners and all others who use the creek as a travelway or for recreation. The young plants will require freedom from human disturbance of all kinds. This further suggests the establishment of obvious access routes from the creek bank to the creek bottom to ease the impact on the planted areas on the sloping banks, and possibly some identification of the small plants, such as a painted post.

Watering of the plants in their early years may well prove the most critical factor in their survival and eventual establishment. Riparian land owners are the logical sources of water, and they may need to be given the incentive to undertake the task of watering so that the project would not evolve as a burden upon any one person or agency.

The eventual growth of the trees, shrubs and vines will provide a riparian community that, while not the replica of the original community, will be more aesthetic than that which now exists. It will provide considerable shade and a great aesthetic value to man, and should encourage song birds and other wildlife.

Elimination of undesirable non-native plant species.

It is deemed both feasible and desirable to attempt to remove all specimens of the following non-native plant species from the banks (including the bank top) of Saratoga Creek within the study area. These plants are recommended for removal either because they are poisonous or more importantly because they tend to take over distrubed areas resulting in the exclusion of certain more desirable native plant species.

Pampas grass
Reed grass
Castor bean
(Ivy)
Bamboo
Ice plant
Prickly pear cactus
Oleander
Tree tobacco

It should be possible for small work parties to remove this limited amount of vegetation with hand tools after the indiviual specimens have been flagged with a marker indicating that they are to be removed.

LAND AND RESOURCE MANAGEMENT ALONG SARATOGA CREEK

Management conflicts.

The following conflicting approaches to land and resource management along Saratoga Creek need to be resolved in order to ensure that restoration efforts will not be counteracted by the policies and proceedures of other management agencies.

1.) Allowing plant succession to proceed towards the riparian condition and setting back succession for pruposes of fire supression.

2.) Encouraging growth of riparian plants in the river (at the base of the bank) and passing water through the channel smoothly and quickly.

3.) Promoting the growth of trees over the creekbed for shade and the cooling of air and water within the channel free of debris.

4.) Safety of the users of the area and preservation of dense low growth of vegetation for improvement of wildlife habitat.

5.) Park landscape management programs and promotion of natural vegetation growth.

6.) Freedom from the disagreeable effects of poisonous and spiny plants and the preservation of the banks.

Suggestions for Maintainance Guidelines

1.) Allow riparian tree species to grow to full height rather than periodically cutting trunks (or multiple limbs) back.

2.) Allow weedy plant species to remain wherever they do not present an extreme fire hazard to adjacent property.

3.) Allow willows, etc. to remain in creekbed at base of banks.

4.) Allow poison oak to remain.

5.) Allow lower limbs on trees to remain.

6.) Clear tree limbs and trunks from creek only after they have fallen into creekbed.

7.) Utilize foot access and hand tool maintainance wherever possible.

8.) Place management vegetation along the creek entirely under the authority of one agency.

9.) Eliminate the use of herbicides for the control of weeds.

10.) Mark important specimens which should not be disturbed before implementing finalized management practices.

11.) Organize community campaign for litter clean-up of creekbed.

12.) Implement ordinance requiring residents to be responsible for the clean-up of refuse deposited along the portion of the creek adjoining their property (within say 6' of the fence) or some other approach which will deter residents from throwing refuse over and under backyard fences.

APPENDIX I REPRESENTATIVE RIPARIAN FLORA IN S.F. BAY REGION

Interior Ranges

- Western sycamore (Platanus racemosa)
- Fremont cottonwood (Populus fremonti)
- Red willow (Salix laevigata)
- Arroyo willow (Salix lasiolepis)

Ranges West of Santa Clara Valley

- Box-elder (Acer negundo)
- Bigleaf maple (Acer macrophyllum)
- White alder (Alnus rhombifolia)
- Red alder (Alnus rubra)

from Smith, Arthur C. 1960. "Biotic Communities of the San Francisco Bay Region" in Introduction to the Natural History of the San Francisco Bay Region. U.C. Press.

IMPROVEMENT OF WILDLIFE HABITAT ALONG SARATOGA CREEK

The continued presence of riparian habitat along Saratoga Creek is integral to the maintainance of wildlife both in the immediate area and at distant undetermined localities. The riparian plant community is one of the most productive of all wildlife habitats in terms of numbers and diversity of animal species which are dependent upon this community for part or all of their existance. Unfortunately, streamside riparian vegetation has been disappearing at an alarming rate in this state due to the pressures generated from urban development in lowland areas.

Although there are several portions of Saratoga Creek within the area which presently support significant wildlife populations there is a great need for improvement of habitat conditions in these areas as well as for habitat regeneration along the more barren reaches of the channel.

Several features can be identified as providing salient conditions for wildlife species in the riparian community. Water is required by most wildlife species in this community and therefore it is not supprising to find concentrations of animals around those places where water remains the longest. The development of permanent water sources, summer water releases, or impoundments along the creek would increase the presence and permanency of wildlife species. Large trees not only provide perches and nesting sites for birds but also shade the water in the creekbed thereby reducing its temperature and thus making it more suitable for use by wildlife species. Trees such as elderberry, oak, willow, buckeye, sycamore, and cottonwood serve this function along Saratoga Creek.

The existance of fairly dense undercover is quite important for most birds, small mammals and reptiles. This is provided by the lower limbs of the riparian trees, suckers and shoots, by shrubs and vines such as Blackberry, Poison oak, Coyote bush, Coffeeberry, and Mugwort, and by the weeds. Streamside vegetation, willows, cattails, sedges, etc., at the toe of the lower bank provides cover for species while approaching the waters edge, nesting along the creek, as well as a permanent home for those animals whose bodily requirements necessitate living or laying their eggs at the waters edge such as amphibians. The lack of dense cover along the lower banks, at the toe of the bank, and on top of the upper banks is one of the major reasons for the lack of sizeable wildlife populations along this portion of Saratoga Creek.

In addition to protective cover and nesting sites, the native trees, shrubs and vines provide a large portion of the forage for the birds and mammals of the area however, one cannot neglect the importance of the non-native weedy plant species as a source of seeds, nectar, and greens for these same organisms.

Changing conditions in vegetation along the creek due to present management requirements preclude and ranking of the existing wildlife habitat areas. Nevertheless it is possible to identify those areas along the creek offering the greatest potential for immediate habitat improvement, these being the sites which contain concentrations of native tree and shrub species. Unfortunately, the areas along Saratoga Creek in connection with the developed parks presently are the poorest wildlife habitat areas owing to the lack of lower branches on the trees, presence of many non-native ornamental plants, scarcity of dense shrubs and vines, and removal of weeds.

Vertebrate Animals Observed Along Saratoga Creek.

Fish - NONE

Amphibians - Western Toad

Reptiles - Western Fence Lizard
Alligator Lizard

Birds - Red-shafted Flicker
House Finch
Brown Towhee
Mockingbird
Robin
Brewers Blackbird
English Sparrow
Starling
Mourning Dove
Scrub Jay
Bullocks Oriole
Cedar Waxwing
Goldfinch
Hummingbird
Bushtit
Black-headed Grosebeak
Killdeer

Mammals - Pocker Gopher
California Ground Squirrel
House Cat

12/7 WAS w/A BHG JLR, LCJ

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TRANSMITTAL MEMORANDUM

TO: Santa Clara Valley Water District
5750 Almaden Expressway
San Jose, CA 95128

DATE: December 6, 1977

FILE: 74025

ATTENTION: Win Stiles

SUBJECT: E.I.R. Saratoga Creek

WE ARE TRANSMITTING: ☒ HEREWITH ☐ UNDER SEPARATE COVER
☒ VIA MAIL ☐ VIA

THE FOLLOWING:

Two xerox copies Appendix F, Ecological Report, by Harvey, Hartesveldt, Heath & Stanley

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VALLEY WATER DISTRICT

BY John M. Stewart
/amp

Santa Clara Valley Water District

MAILROOM ROUTING SLIP

FC 354A (08-09-77)

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	ENANDER				
	ESAU				
	FOWLER				
	GARRETT				
	HENLEY				
	WILSON				

No.	Name	Initial	1977	Code	No.	Name	Initial	1977	Code	No.	Name	Initial	1977	Code
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K. Prepare response
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